



From Student Editor's Desk

Rural Technology Action Group at IIT Delhi is very thankful to all the different IITs who have given the information regarding their technologies.

I am very happy to inform you that this is the second newsletter in the year 2015 and in which our team has tried to compile the various technologies that have been developed in all the IITs under the RuTAG. We have also provided the format for a project description which aims to give a better view of understanding, problem formulation and presentation of the solution. In the last, we have given some recent past experiences of our members who were associated with the RuTAG.

Working in RuTAG gives a sense of contentment and inner satisfaction when I realize that I am also contributing to the society in some sense. RuTAG provides us real-life problems, expands our vision, motivates us to work hard and eventually make the planet a better place to live by helping others.

(Harsh Harlalka)

From Faculty Editor's Desk

Let me start by wishing a very *Happy Independence Day 2015!* It gives me an immense pleasure to see this newsletter for the second time in a year. We started planning for this newsletter in March/April. This time we decided to include the news from all seven IITs where RuTAG units exist. It took little long (about 4 months) to compile the information and formatting them, but finally we could reach the goal. It is not so easy to collect information from all IITs at the same time and compile them. I must thank our student editor Mr. Harsh Harlalka (a 4th year student at IIT Delhi) to do this difficult job. He has done it for the second time in a row. Kudos to him! I must also acknowledge my counterparts at other IITs for providing the articles with photos:

Prof. Anand B. Rao, IIT Bombay; Prof. S. K. Kakoty, IIT Guwahati; Dr. Ram Kumar, IIT Kanpur; Prof. P. B. S. Bhadoria, IIT Kharagpur; Prof. Devendra Jalihal, IIT Madras; and Prof. R. P. Saini, IIT Roorkee.

I know many other people at various IITs must be behind the good work at their RuTAG units. Thanks to all of them. Please note that not all articles from all IITs could be brought out in this issue due to space limitation. We have kept them for our future issues (next one is planned in January 2016). In this newsletter, we have introduced a new section where we are proposing to pose the RuTAG problems in a format suitable for the B. Tech/M. Tech/Ph. D students to understand them easily and probably take them as their final year/research project. That way, I firmly belief, that even if they cannot solve all the rural problems instantly but at least they will be aware of them, which may lead them to become rural entrepreneur or take actions to solve them towards the *Developed India* of our Former President Dr. A. P. J. Abdul Kalam who is no more with us. It is, however, our responsibility to fulfil his dream. I welcome all to come forward to work on those problems and be happy with the feeling of social contributions!

(S. K. Saha)

Students Speak

The Bharatpur trip organized by RuTAG IIT Delhi has given me a new dimension to perceive things. I came here for developing business plan for the standardized treadle pump technology but eventually developed business plans for the technology of treadle pump and device for making tulsī mala beads. The RuTAG team of IIT Delhi is very cooperative and I feel myself lucky to be a part of such enthusiastic and talented group and the associated students' club.

Arindam Mondal, Under Case Study Research Segment, KIIT School of Rural Management, Bhubaneswar, Odisha

In our journey to Rampur village of Rudraprayag district of Uttarakhand region, the shepherds, who before the crisis of flash flood did not consider sheep wool as a valuable resource of livelihood, were to be made aware of the potential income from it, through the adaptation of sheep hair shearing device developed by IIT Delhi. It was something special that provided peace in mind to be a part of greater good. We look forward to more such exhilarating experiences during our association with RuTAG IIT Delhi.

Shrey Gulati and Sumit Soni, 4th Year B. Tech Students, IIT Delhi

LIST OF TECHNOLOGIES DEVELOPED BY RUTAG¹

S. No.	Title of Projects	Developed by
1	Adaptation of Sheep Hair Shearing Device	RuTAG IIT Delhi
2	Evaluation and Standardization of Animal Driven Water Pump	RuTAG IIT Delhi
3	Utilization of the Standardized Animal Driven Gear Box for Multiple Rural Applications	RuTAG IIT Delhi
4	A Device for Making Tulsi Mala Beads	RuTAG IIT Delhi
5	Improved Design to Reduce Drudgery in Operation of the Human-operated Treadle Pump for Irrigation	RuTAG IIT Delhi
6	A Machine for De-husking of Minor Millets	RuTAG IIT Delhi
7	A Technology Package for Garlic Processing for Value Addition	RuTAG IIT Delhi
8	Improving Design of Bullock Driven Tractor to make it more User Friendly	RuTAG IIT Delhi
9	Facilitating the Use of “Fruwash” Technology for Extending Shelf Life of Fruits and Vegetables	RuTAG IIT Delhi
10	Technology Standardization and Development of Testing –cum-Training Facility for Ultra-micro Hydrel Power Packages for Rural Applications	RuTAG IIT Delhi
11	Improvement of Furnace Design for Bangles making and Working Conditions of the Artisans.	RuTAG IIT Delhi
12	Murhi (Puffed Rice) making machine	RuTAG IIT Kharagpur
13	Mechanized Dhenki	RuTAG IIT Kharagpur
14	Modified Bageshwari Charkha	RuTAG IIT Kharagpur
15	Sabai Grass Rope making machine	RuTAG IIT Kharagpur
16	Pedal Driven Potter’s Wheel	RuTAG IIT Kharagpur
17	Production of Charcoal by Pyrolysis of Prosopis Juliflora	RuTAG IIT Madras
18	Low Cost Sanitary Napkins	RuTAG IIT Madras
19	Design and Manufacture of Modernized Coir Ratt	RuTAG IIT Madras
20	Removable Bridge Across Canal	RuTAG IIT Roorkee
21	Improved Ropeway System at Dhari Kalogi of Naugaon block, Uttarkashi	RuTAG IIT Roorkee
22	Fish Cage Project	RuTAG IIT Bombay
23	Modified Peddle Loom	RuTAG IIT Bombay
24	Motorized Jute Rope Making Machine	RuTAG IIT Bombay
25	Improved Metallurgy of Horse Shoes	RuTAG IIT Kanpur
26	Bicycle with Higher Carrying Capacity	RuTAG IIT Guwahati
27	Technology for Production of Bamboo Charcoal and Extracting of Bamboo Vinegar	RuTAG IIT Guwahati
28	Multi-nutrient Compact Feed Block Production Machine for Cattle of Higher Altitude Region	RuTAG IIT Guwahati
29	Hank to Bobbin Winding machine	RuTAG IIT Guwahati
30	Pirn Winding Machine	RuTAG IIT Guwahati
31	Power Loom for Producing Muga Fabric	RuTAG IIT Guwahati

¹ For details of the projects or know other projects, please visit the respective websites given at the end of this newsletter .

1. INTEGRATED MOTORIZED RICE PUFFING MACHINE BY RuTAG IIT KHARAGPUR

An integrated Muri (rice puff) making machine has been developed to solve the problem of smoke and hardening of rice. It allows the production of 50 kg Muri per hour with uniform quality and present income has increased from Rs 3,000 to Rs. 12,000 per month. The fuel requirement has also been reduced, approximately 30 kg of fuel (biomass) is sufficient for making 100 kg of Muri.

2. COIR RATT BY RuTAG IIT MADRAS

This machine doubles the productivity of the popular Vycome ropes. Two input feed rollers enable one person to feed the coir fiber for two strands, which are individually twisted. They are then fed into a twisting-pulling mechanism to combine and form the rope. The quality and consistency tested by the Indian Coir Spinners Association in Allapuzha.

3. FISH CAGE PROJECT BY RuTAG IIT BOMBAY

This project has helped the families that were displaced due to construction of Dimbhe dam. Due to very steep slopes of the reservoir banks, Fish Cage method was proposed by CIFE. With the implementation of fish cages, fish catch has gone up by 6625 kg in 2011 to 17670 in 2014. This project has helped more than 150 families in the area.

4. POWER LOOM FOR PRODUCING MUGA FABRIC BY RuTAG IIT GUWAHATI

Muga silk was not produced in power looms earlier. The patented technology of Mr. Dulal Choudhary is used in modifying four power looms for production of muga fabric.

5. IMPROVEMENT IN FURNACE DESIGN AND WORKING CONDITIONS FOR MAKING BANGLES BY RuTAG IIT DELHI

By implementing the improvements (under development) there is expected to be less consumption of fuel along with proper use of chimney. Eventually there will be less polluted working environment. The seating arrangement developed has been appreciated by the artisans.



FORMAT FOR ACADEMIC/RESEARCH PROJECT DESCRIPTION

It is attempted here to pose the RuTAG projects as academic research projects which can be undertaken by UG/PG students of various IITs and other institutes. The solutions provided by them will not only aid the RuTAG activities but also will make them aware of such issues in the society and get satisfaction for the fact that their education has contributed to solve the problems of the society. As an illustration, "Adaption of Sheep Shearing Device" is posed below. It is expected that over time many of such RuTAG problems will be taken up by our B. Tech/M. Tech/Ph. D students. The format is kept as simple as possible for the students to understand the level of knowledge required and the commitment in terms of duration, etc.

Title: Adaption of Sheep Shearing Device developed by IIT Delhi

Introduction: Currently in most of the places the shepherds use scissor-type blades. The blades of the scissors need to be sharpened on a regular basis and thus one can use them for a limited period of time. Moreover, one needs to apply larger muscle power, which is tedious for a longer duration to shear a sheep hairs. Hence, an indigenous motorized device was developed by IIT Delhi during 2006-2008 under the funding from Central Wool Development Board, Jodhpur. This device was successfully tested in Manali on more than 100 sheep's and found ready to be used by shearers.



Scissor-like Blades



Indigenous Motorized Device



Alternative Motorized Device

Identification of Research/Academic Topic, Estimated Duration and Student Level:

1. To study the blade shearing and develop an improved mechanized/manual trimmer, 06 months, B. Tech 2nd year and above.
2. To study indigenous motorized device and suggest improvement in the materials of combs and cutters, B. Tech, 3rd/4th year and above, 06 months.
3. To study the alternative motorized device and suggest and improved mechanism for motion transfer, B. Tech 4th year/M. Tech and above, 12 months.

Faculty in Charge and Further Contact Details

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RuTAG LINKS

IIT Delhi	www.rutag.iitd.ac.in
IIT Kanpur	www.iitk.ac.in/rutag/
IIT Kharagpur	www.iitkgp.ac.in
IIT Madras	www.icandsr.iitm.ac.in/social_development
IIT Bombay	www.ctara.iitb.ac.in/rutag/
IIT Guwahati	www.iitg.ac.in/mech/Rutag-pal/index1.htm
IIT Roorkee	www.rutagiitr.wordpress.com

Recent Workshop

RuTAG IIT Delhi conducted a regional workshop on April 17, 2015 at the National Institute of Technical Teachers Training and Research (NITTTR), Bhopal, Madhya Pradesh (MP with the help of Mr. S. R. Azad of MP Vigyan Sabha, Gyan Vigyan Parishar Sagonikalam, Bhopal. The programme was attended by about 33 participants from about 10 NGOs, one faculty member from MANIT Bhopal, one Scientist from CAIE Bhopal, and former Vice-Chancellor of Mahatma Gandhi Chtroakoot Gramodaya Vishwavidyalya, Chtrokoot, MP.

Contacts

For technical advice and collaboration

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